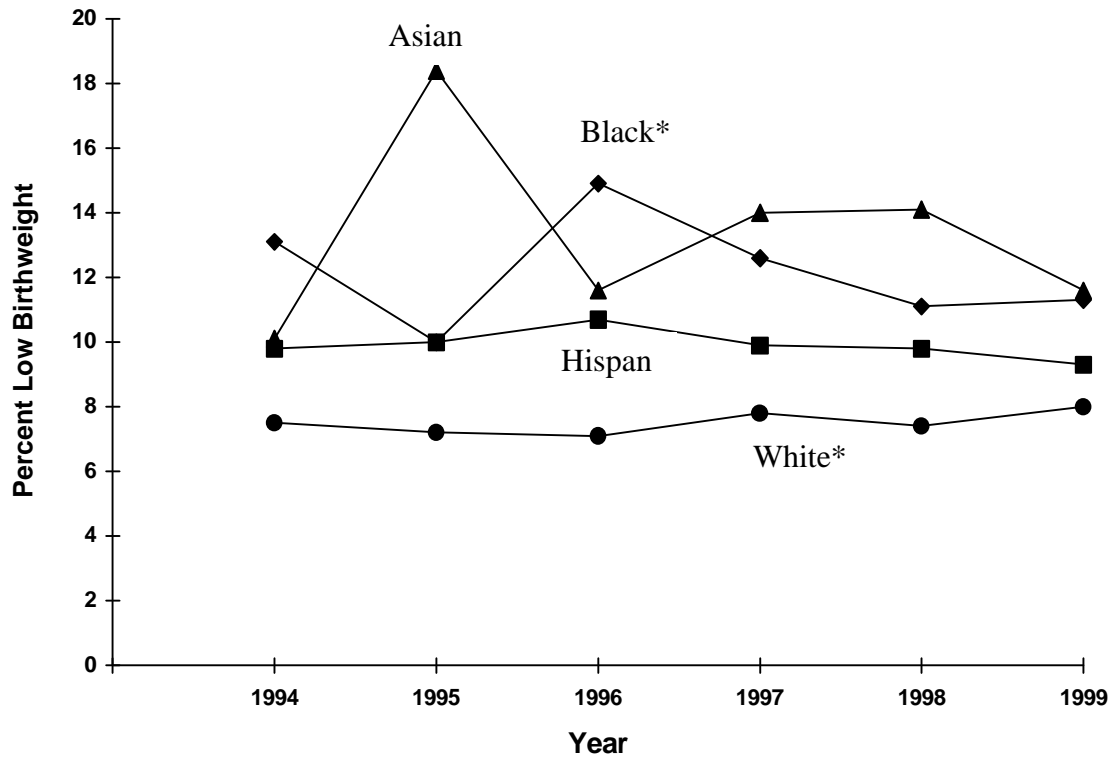


*II.*

*Birth Outcomes and  
Prenatal Care*

Figure 6.

**Trends in Percent Low Birthweight<sup>1</sup> among Births to Women  
Under Age 20 by Race/Hispanic Ethnicity  
Massachusetts: 1994-1999**



	1994	1995	1996	1997	1998	1999
White*	7.5	7.2	7.1	7.8	7.4	8.0
Black*	13.1	10.0	14.9	12.6	11.1	11.3
Hispanic	9.8	10.0	10.7	9.9	9.8	9.3
Asian*	10.1	18.4	11.6	14.0	14.1	11.6
Total	9.1	8.6	9.4	9.5	8.9	9.0

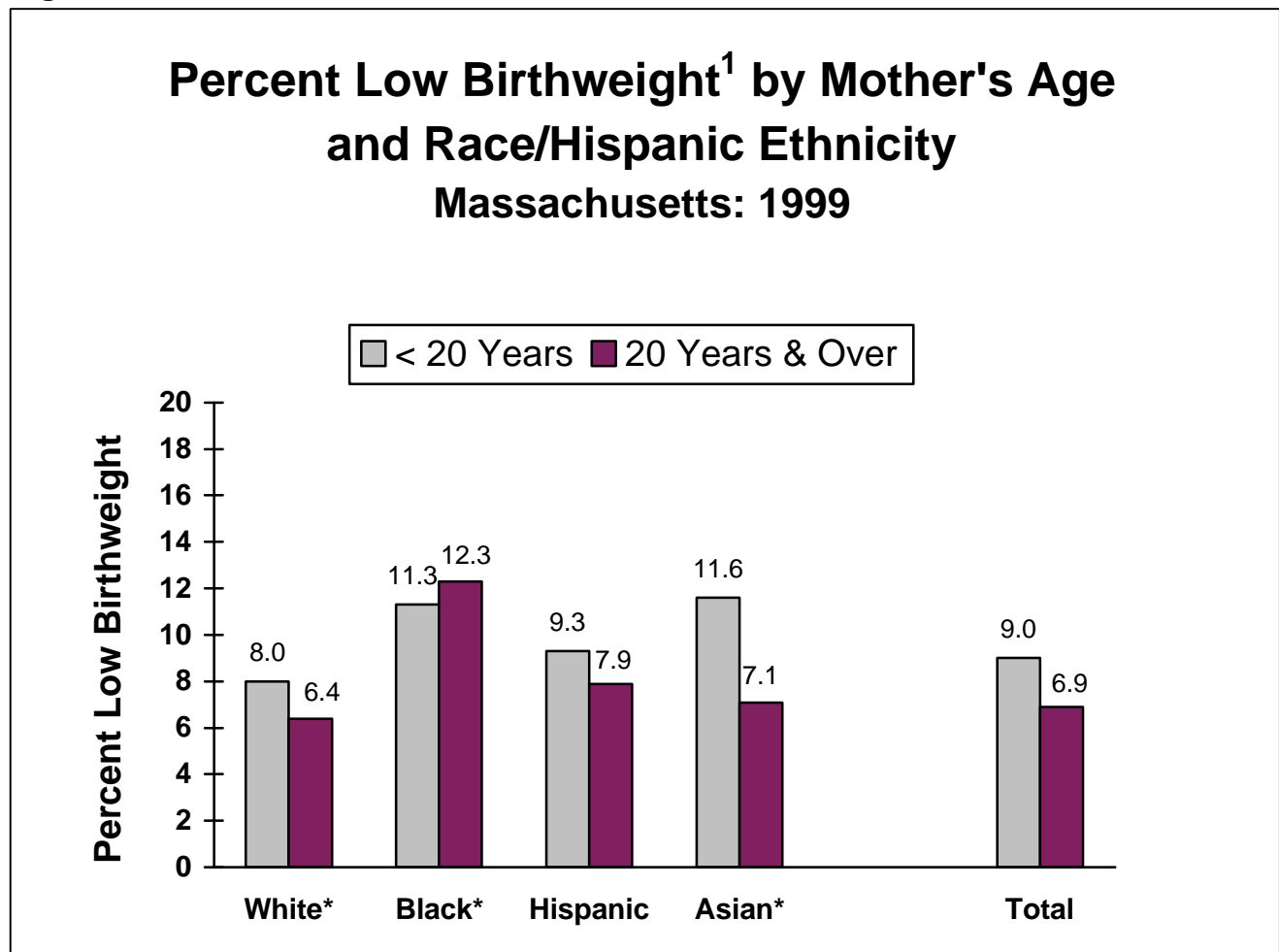
Source: Registry of Vital Records and Statistics, MDPH, 1994-1999

\* Non-Hispanic

<sup>1</sup> Low birthweight: < 2,500 grams or 5.5 pounds

- In 1999, the total proportion of low birthweight births (less than 2,500 grams) among births to teens under 20 was 9.0%, approximately the same as in 1998 (8.9%).
- The occurrence of low birthweight (LBW) among teens continued to differ across race/Hispanic ethnicity groups. In 1999, the percentage of LBW infants among births to teens was 8.0% for white non-Hispanic teen mothers, 11.3% for black non-Hispanics, 9.3% for Hispanics, and 11.6% for Asians.
- In 1996, the widest gap between the percentages of LBW infants born to teens was between births to white non-Hispanic teen mothers (7.1%) and births to black non-Hispanic mothers (14.9%). This gap narrowed by 1999 as a function of an increase in LBW among white non-Hispanic teen births (to 8.0%) and a decrease among black non-Hispanic births (to 11.3%). During the same period, percentage of LBW births among Hispanic teen births decreased from 10.7% to 9.3%.
- *As the number of births to Asian teen mothers is small (n=215), their LBW percentages fluctuate widely and changes over time should be interpreted with caution.* The percentage of LBW births to Asian teen mothers decreased from 18.4% in 1995 to 11.6% in 1996. This percentage remained nearly fixed from 1997 (14.0%) to 1998 (14.1%) and then dropped again in 1999 (11.6%).

Figure 7.



Source: Registry of Vital Records and Statistics, MDPH, 1999

\* Non-Hispanic

<sup>1</sup> Low birthweight: < 2,500 grams or 5.5 pounds

- The percentage of low birthweight births among teen births was 30.4% higher than it was for births to adult women (9.0% vs. 6.9%).
- This ratio varied by race/Hispanic ethnicity. Low birthweight among births to black non-Hispanic teens in 1999 was 8.1% lower than among births to black non-Hispanic adults (11.3% vs. 12.3%). Low birthweight among white non-Hispanic teens was 25.0% higher than among white non-Hispanic adult women (8.0% vs. 6.4%), while Asian teens had a 63.4% higher percentage of low birthweight births compared with adult Asian women (11.6% vs. 7.1%).

**Table 13.**  
**Low Birthweight<sup>1</sup> Births by Mother's Age and Race/Hispanic Ethnicity**  
**Massachusetts: 1999**

Mother's Age	White*		Black*		Hispanic		Asian*		Other		Unknown		Total	
	N <sup>2</sup>	% <sup>3</sup>	N <sup>2</sup>	% <sup>3</sup>	N <sup>2</sup>	% <sup>3</sup>	N <sup>2</sup>	% <sup>3</sup>	N <sup>2</sup>	% <sup>3</sup>	N <sup>2</sup>	% <sup>3</sup>	N <sup>2</sup>	% <sup>3</sup>
<b>All Ages<sup>4</sup></b>	3,833	6.3	712	12.2	721	8.2	301	7.3	137	9.3	4	**	5,708	7.1
<b>20 +</b>	3619	6.3	631	12.3	558	7.9	276	7.1	118	9.4	3	**	5205	6.9
<b>&lt; 20</b>	214	8.0	81	11.3	163	9.3	25	11.6	19	8.7	1	**	503	9.0
<b>&lt;18</b>	76	9.7	36	13.4	63	8.9	15	17.4	6	8.0	1	**	197	10.2
<b>18-19</b>	138	7.3	45	10.0	100	9.6	10	7.8	13	9.1	0	0.0	306	8.4
<b>15-17</b>	74	9.7	34	13.2	59	8.7	14	17.3	6	8.5	1	**	188	10.2
<b>&lt;15</b>	2	**	2	**	4	**	1	**	0	0.0	0	0.0	9	12.3

Source: Registry of Vital Records and Statistics, MDPH, 1999

\* Non-Hispanic

\*\* Calculations based on 1-4 events are excluded.

<sup>1</sup> Low birthweight: < 2,500 grams or 5.5 pounds

<sup>2</sup> "N" is the total number of low birthweight births in each category.

<sup>3</sup> Percentages are based on the total number of births in each category for which birthweight is known.

- Low birthweight births continued to vary with maternal age, with the highest percentage overall occurring among the infants of women less than 15 years old (12.3%), and the lowest occurring among births to women ages 20 and older (6.9%). The occurrence of low birthweight births among women under 20 was 30.4% higher than it was for births to women 20 and over (9.0% vs. 6.9%). The only exception to this occurred among black non-Hispanic mothers where a higher percentage of adult mothers compared to teen mothers delivered low birthweight infants (12.3% vs. 11.3%).
- Low birthweight varied, to some extent, by race/Hispanic ethnicity. Hispanic teens (<20 years of age) were 16.3% more likely to deliver with LBW than white non-Hispanic women. The percentage of LBW births to black non-Hispanic teens was 41.2% higher than LBW among white non-Hispanic teens.

**Table 14.**  
**Low Birthweight<sup>1</sup> among Teen Births**  
**by Level of Prenatal Care<sup>2,3</sup> and Mother's Race/Hispanic Ethnicity**  
**Massachusetts: 1999**

Mother's Race/ Ethnicity	Level of Prenatal Care								
	Adequate			Intermediate			Late/None		
	Births	Low Birthweight		Births	Low Birthweight		Births	Low Birthweight	
	N <sup>4</sup>	N	%	N <sup>4</sup>	N	%	N <sup>4</sup>	N	%
<b>&lt; 20 Years</b>	3,284	284	8.6	1,742	145	8.3	520	63	12.1
<b>White*</b>	1,611	126	7.8	831	56	6.7	225	27	12.0
<b>Black*</b>	408	45	11.0	232	26	11.2	72	10	13.9
<b>Hispanic</b>	1,042	93	8.9	519	48	9.2	173	17	9.8
<b>Asian*</b>	100	8	8.0	84	11	13.1	28	6	21.4
<b>Other*</b>	121	12	9.9	75	4	**	22	3	**
<b>Unknown</b>	2	0	0.0	1	0	0.0	0	0	0.0

Source: Registry of Vital Records and Statistics, MDPH, 1999

\* Non-Hispanic

\*\* Calculations based on 1-4 events are excluded.

<sup>1</sup> Low birthweight: < 2,500 grams or 5.5 pounds

<sup>2</sup> Adequacy of Prenatal Care is determined by a calculation that combines trimester of prenatal care registration with the number of prenatal care visits and adjusts for gestational age (see Glossary for further explanation).

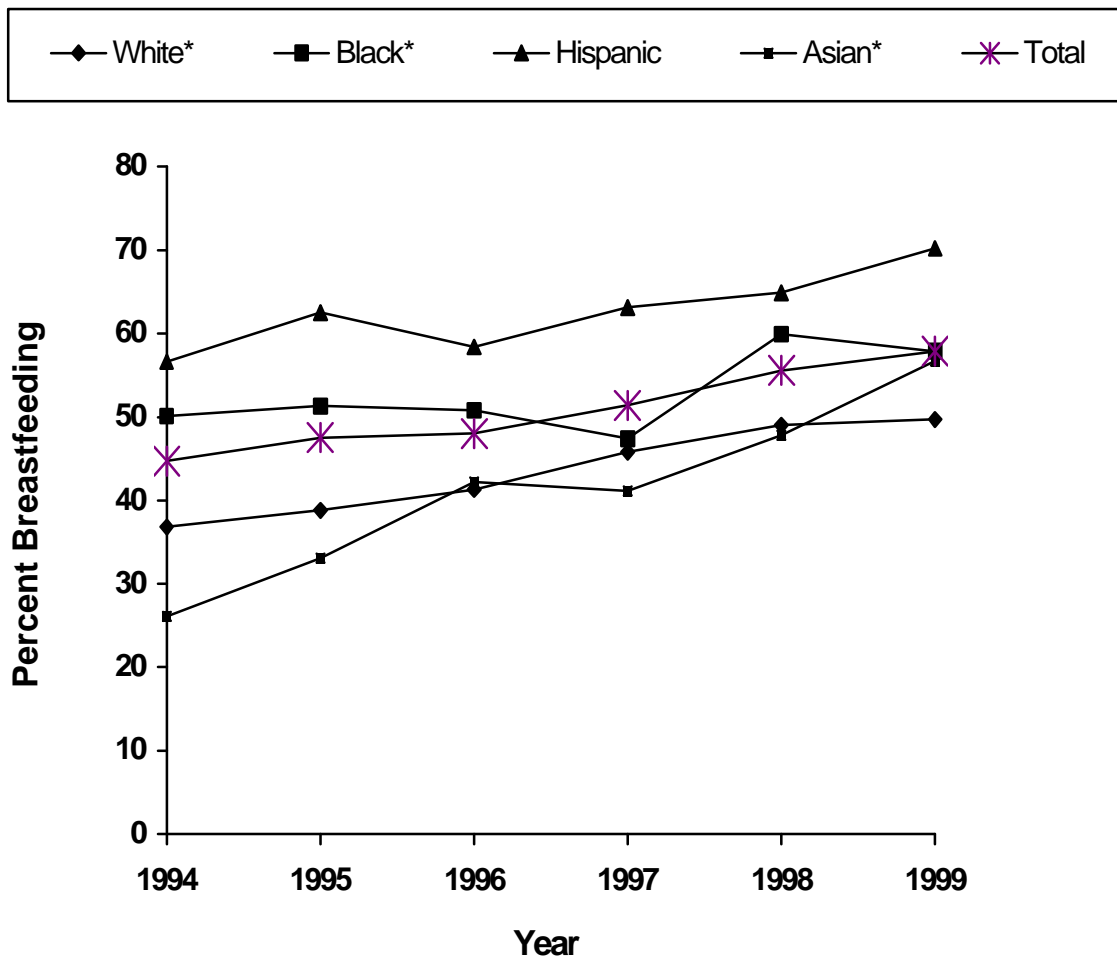
<sup>3</sup> Due to a change in 1996 in the collection of information on Adequacy of Prenatal Care, caution should be used when comparing these data over time. Refer to Foreword for an explanation of these changes.

<sup>4</sup> Births with unknown birthweight and/or unknown adequacy of prenatal care are excluded.

- Teen mothers (< 20 years of age) with no or late prenatal care were more likely to deliver with low birthweight (12.1%) than those who received adequate (8.6%) or intermediate care (8.3%). Those who received intermediate prenatal care were similarly likely to have low birthweight births (8.3%) compared with those who received an adequate level of care (8.6%), but this varied widely across race/Hispanic ethnicity groups.
- Black non-Hispanic teens with adequate prenatal care had a substantially higher percentage of low birthweight (11.0%) than white non-Hispanic teens with adequate prenatal care (7.8%).
- Among black non-Hispanic, Hispanic, and Asian teen mothers, an increase in the level of prenatal care resulted in a decrease in the percentage of low birthweight births. Among white non-Hispanic teen others, the lowest percentage of low birthweight births was exhibited by those receiving an intermediate level of prenatal care.

Figure 8.

### Trends in Percent of Women under Age 20 Breastfeeding<sup>1</sup> by Race/Hispanic Ethnicity Massachusetts: 1994-1999



	1994	1995	1996	1997	1998	1999
White*	36.8	38.8	41.3	45.8	49.0	49.7
Black*	50.1	51.3	50.8	47.4	59.9	57.9
Hispanic	56.6	62.5	58.4	63.1	64.9	70.2
Asian*	26.1	33.1	42.2	41.1	47.8	56.7
Total	44.7	47.5	48.0	51.4	55.6	57.9

Source: Registry of Vital Records and Statistics, MDPH, 1999

\* Non-Hispanic

<sup>1</sup> Mother was breastfeeding or intending to breastfeed at the time the birth certificate was completed.



- The percentage of teen mothers who reported breastfeeding or an intention to breastfeed increased between 1998 and 1999 for all race/Hispanic ethnic groups except black non-Hispanic teen mothers. The overall rate increased from 55.6% to 57.9%. The most dramatic change occurred among Asian teen mothers, increasing from 47.8% in 1998 to 56.7% in 1999.
- Hispanic teen mothers continued to have the highest percentage of breastfeeding or intention to breastfeed in 1999. This percentage has consistently remained higher than 50% over the last six years. While all groups have shown an increase in the percentage of mothers breastfeeding, Asian teen mothers have shown the largest increase (26.1% to 56.7%) over the last six years.

**Table 15.**  
**Prenatal Care and Birth Characteristics By Mother's Age and Race/Hispanic Ethnicity**  
**Massachusetts: 1999**

Mother's Race/Ethnicity	Birthweight <sup>1</sup>				Prenatal Care				C-Section		Breastfeeding <sup>4</sup>	
	Very Low		Low		Adequate Care <sup>2,3</sup>		First Trimester					
	N	% <sup>5</sup>	N	% <sup>5</sup>	N	% <sup>5</sup>	N	% <sup>5</sup>	N	% <sup>5</sup>	N	% <sup>5</sup>
All Ages <sup>6</sup>	1,120	1.4	5,708	7.1	63,728	79.4	67,732	84.3	18,080	22.4	57,394	72.4
20 + Years	1,018	1.4	5,205	6.9	60,441	80.9	64,136	85.7	17,365	23.1	54,199	73.5
< 20 Years	102	1.8	503	9.0	3,287	59.2	3,596	64.7	715	12.8	3,195	57.9
White*	46	1.7	214	8.0	1,613	60.4	1,760	65.8	341	12.7	1,303	49.7
Black*	18	2.5	81	11.3	409	57.3	454	63.4	115	16.0	414	57.9
Hispanic	30	1.7	163	9.3	1,042	60.1	1,146	66.0	216	12.4	1,223	70.2
Asian*	3	**	25	11.6	100	47.2	106	49.8	10	4.7	122	56.7
Other*	4	**	19	8.7	121	55.5	128	58.7	33	15.1	132	60.6
Unknown	1	**	1	**	2	**	2	**	0	0.0	1	**

Source: Registry of Vital Records and Statistics, MDPH, 1999

\* Non-Hispanic

\*\* Calculations based on 1-4 events are excluded.

<sup>1</sup> Very low birthweight: < 1,500 grams or 3.3 pounds Low birthweight: < 2,500 grams or 5.5 pounds

<sup>2</sup> Adequacy of Prenatal Care is determined by a calculation that combines trimester of prenatal care registration with the number of prenatal care visits and adjusts for gestational age. (See Glossary for further explanation).

<sup>3</sup> Beginning in 1996, due to changes in the collection of information on Adequacy of Prenatal Care, caution should be used when comparing these data over time. Refer to Foreword for an explanation of these changes.

<sup>4</sup> Mother was breastfeeding or intending to breastfeed at the time the birth certificate was completed.

<sup>5</sup> Percentages are based on total number of births within each category when birthweight, prenatal care, cesarean section or breastfeeding information is known.

- In 1999, very low birthweight was still more common among births to teens (<20 years) than among births to older women (1.8% vs. 1.4%). Among teen births, very low birthweight was highest among births to black non-Hispanic mothers (2.5%).
- As in previous years, women under 20 were less likely than women over 20 to receive adequate prenatal care (59.2% vs. 80.9%), as well as prenatal care during the first trimester (64.7% vs. 85.7%).
- A higher percentage of white non-Hispanic and Hispanic teens received adequate prenatal care (60.4% and 60.1% respectively) compared with other race/Hispanic ethnicity groups. Asian teen mothers had the lowest percentage (47.2%), although the percentage has increased 30.4% since 1998 (36.2%).
- 66.0% of Hispanic teens began prenatal care during the first trimester compared to only 49.8% of Asian teen mothers.
- C-Sections were less common among teen mothers than non-teen mothers (12.8% vs. 23.1%). The percentage for teen mothers remained stable from 1998 to 1999 (12.4% vs. 12.8%), while the percentage for adult mothers rose from 21.5% to 23.1% (1998 data not shown).
- Breastfeeding or an intention to breastfeed, was reported by over half of the teen mothers (57.9%) compared with nearly three-quarters (73.0%) of older mothers. The intention to breastfeed varied widely among race/Hispanic ethnicity groups.

**Table 16.**  
**Births by Gestational Age, Mother's Age, and Mother's Race/Hispanic Ethnicity**  
**Massachusetts: 1999**

Mother's Age and Gestational Age <sup>1</sup> (weeks completed)	White*		Black*		Hispanic		Asian*		Other*		Unknown		Total	
	N	% <sup>2</sup>	N	% <sup>2</sup>	N	% <sup>2</sup>	N	% <sup>2</sup>	N	% <sup>2</sup>	N	% <sup>2</sup>	N	% <sup>2</sup>
<b>20 Years and Older</b>	57,702	100.0	5,124	100.0	8,405	100.0	2,609	100.0	1,252	100.0	186	100.0	75,278	100.0
<b>&lt; 37 weeks</b>	4,025	7.0	618	12.1	686	8.2	194	7.4	121	9.7	2	**	5,646	7.5
<b>37-42 weeks</b>	53,228	92.2	4,482	87.5	7,670	91.3	2,401	92.0	1,125	89.9	71	38.2	68,977	91.6
<b>43 + weeks</b>	67	0.1	5	0.1	13	0.2	1	**	1	**	0	0.0	87	0.1
<b>Unknown</b>	382	0.7	19	0.4	36	0.4	13	0.5	5	0.4	113	60.8	568	0.8
<b>Less than 20 Years</b>	2,686	100.0	719	100.0	1,756	100.0	205	100.0	218	100.0	4	**	5,588	100.0
<b>&lt; 37 weeks</b>	215	8.0	71	9.9	169	9.6	19	9.3	15	6.9	1	**	490	8.8
<b>37-42 weeks</b>	2,443	91.0	646	89.8	1,578	89.9	186	90.7	202	92.7	2	**	5,057	90.5
<b>43 + weeks</b>	3	**	1	**	3	**	0	0.0	0	0.0	1	**	8	0.1
<b>Unknown</b>	25	0.9	1	**	6	0.3	0	0.0	1	**	0	0.0	33	0.6

Source: Registry of Vital Records and Statistics, MDPH, 1999

\* Non-Hispanic

\*\* Calculations based on 1-4 events are excluded.

<sup>1</sup> Clinical estimate of the number of weeks of pregnancy completed as estimated by the attendant at birth or the postnatal physician. The definition of normal gestational age has been revised for 1999 report (see Technical Notes).

<sup>2</sup> Percentages are based on column totals.

- The incidence of preterm birth (< 37 weeks gestation) continued to be higher among teen births than among births to older women (8.8% vs. 7.5%). The gap between the two groups remained essentially stable in the past year from 1.0% in 1998 to 1.3% in 1999 (1998 data not shown).
- The percentage of preterm births was 9.9% among black non-Hispanic teen mothers and 9.6% among Hispanic teen mothers. White non-Hispanic teen mothers had the lowest percentage of preterm delivery among race/Hispanic ethnicity groups (8.0%).

**Table 17.**  
**Trends in Infant Mortality Rates<sup>1</sup> by Mother's Age and Race/Hispanic Ethnicity**  
**Massachusetts: 1992-1998<sup>2</sup>**

Mother's Age	White*		Black*		Hispanic		Asian*		Other/Unk		Total	
	N <sup>3</sup>	Rate	N <sup>3</sup>	Rate	N <sup>3</sup>	Rate	N <sup>3</sup>	Rate	N <sup>3</sup>	Rate	N <sup>3</sup>	Rate
1992- 20+	343	5.4	89	15.9	41	6.1	18	5.8	16	16.0	507	6.3
	<20	32	9.0	20	18.9	19	11.0	0	0.0	2	73	11.0
1993- 20+	318	5.1	68	12.6	47	7.3	10	3.2	11	11.1	454	5.8
	<20	25	7.2	14	14.0	23	12.7	2	**	0	64	9.7
1994- 20+	293	4.8	73	13.9	37	5.7	14	4.4	15	15.2	432	5.6
	<20	33	10.0	8	8.0	20	10.3	1	**	2	64	9.7
1995- 20+	228	3.8	55	11.0	48	7.6	15	4.6	13	12.7	359	4.8
	<20	25	7.8	7	8.1	15	8.7	0	0.0	1	48	7.9
1996- 20+	239	4.1	55	11.8	31	5.1	10	2.9	14	9.8	349	4.7
	<20	21	7.1	10	12.3	13	7.5	1	**	2	47	8.0
1997- 20+	251	4.3	46	9.6	43	6.2	11	3.1	18	12.5	369	4.9
	<20	14	4.7	11	14.8	12	6.8	0	0.0	4	41	6.9
1998- 20+	243	4.1	50	10.4	44	6.4	12	3.4	9	6.3	358	4.7
	<20	20	6.8	7	9.4	14	7.9	1	5.4	1	43	7.3

Source: Registry of Vital Records and Statistics, MDPH: 1991-1999

\* Non-Hispanic

\*\* Calculations based on 1-4 events are excluded.

<sup>1</sup> Age and race-specific infant mortality rate: Number of infant deaths per 1,000 live births in each age group

<sup>2</sup> 1998 is the last year data are available for this analysis (see Technical Notes for further explanation of age-specific infant mortality).

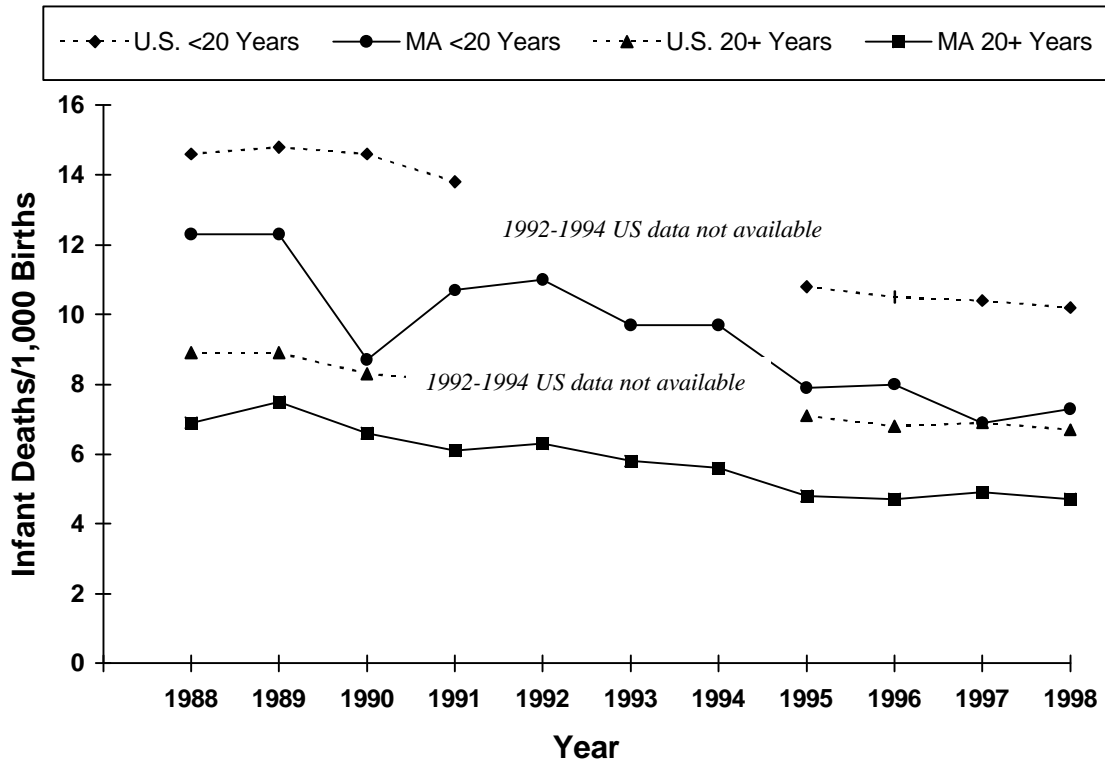
<sup>3</sup> "N" refers to the number of infants born in that year who died before their first birthday.

- As in previous years, the 1998 infant mortality rate (IMR) was higher among births to teen mothers compared to births to adult mothers. This difference, however, increased slightly between 1997 and 1998, as the IMR among births to adults dropped from 4.9 to 4.7 deaths per 1,000 live births, while the IMR for births to teens increased from 6.9 to 7.3.
- In 1998, the IMR was higher among births to teen mothers compared to births to adult mothers among all race/Hispanic ethnicity categories except black non-Hispanics.
- The IMR among births to teen mothers dropped considerably among black non-Hispanic teens in 1998 following two years of increased rates. Between 1997 and 1998, the IMR among births to black non-Hispanic teen mothers dropped 36.5% from 14.8 to 9.4 deaths per 1,000 live births.
- IMR among births to teen mothers increased for both white non-Hispanic women and Hispanic women in 1998. The rate among white non-Hispanic teen mothers rose from 4.7 to 6.8, while the rate among Hispanic teen mothers went from 6.8 to 7.9.

Figure 9.

## Trends in Infant Mortality Rates<sup>1</sup> by Mother's Age

### Massachusetts: 1988-1998<sup>2</sup> and U.S.: 1988-1991, 1995-1998<sup>3</sup>



	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
U.S. <20 Years	14.6	14.8	14.6	13.8	N/A	N/A	N/A	10.8	10.5	10.4	10.2
MA <20 Years	12.3	12.3	8.7	10.7	11.0	9.7	9.7	7.9	8.0	6.9	7.3
U.S. 20+	8.9	8.9	8.3	8.1	N/A	N/A	N/A	7.1	6.8	6.9	6.7
MA 20+	6.9	7.5	6.6	6.1	6.3	5.8	5.6	4.8	4.7	4.9	4.7

Source: Registry of Vital Records and Statistics, MDPH, 1988-1999;  
National Center for Health Statistics, 1988-1991 and 1995-1999

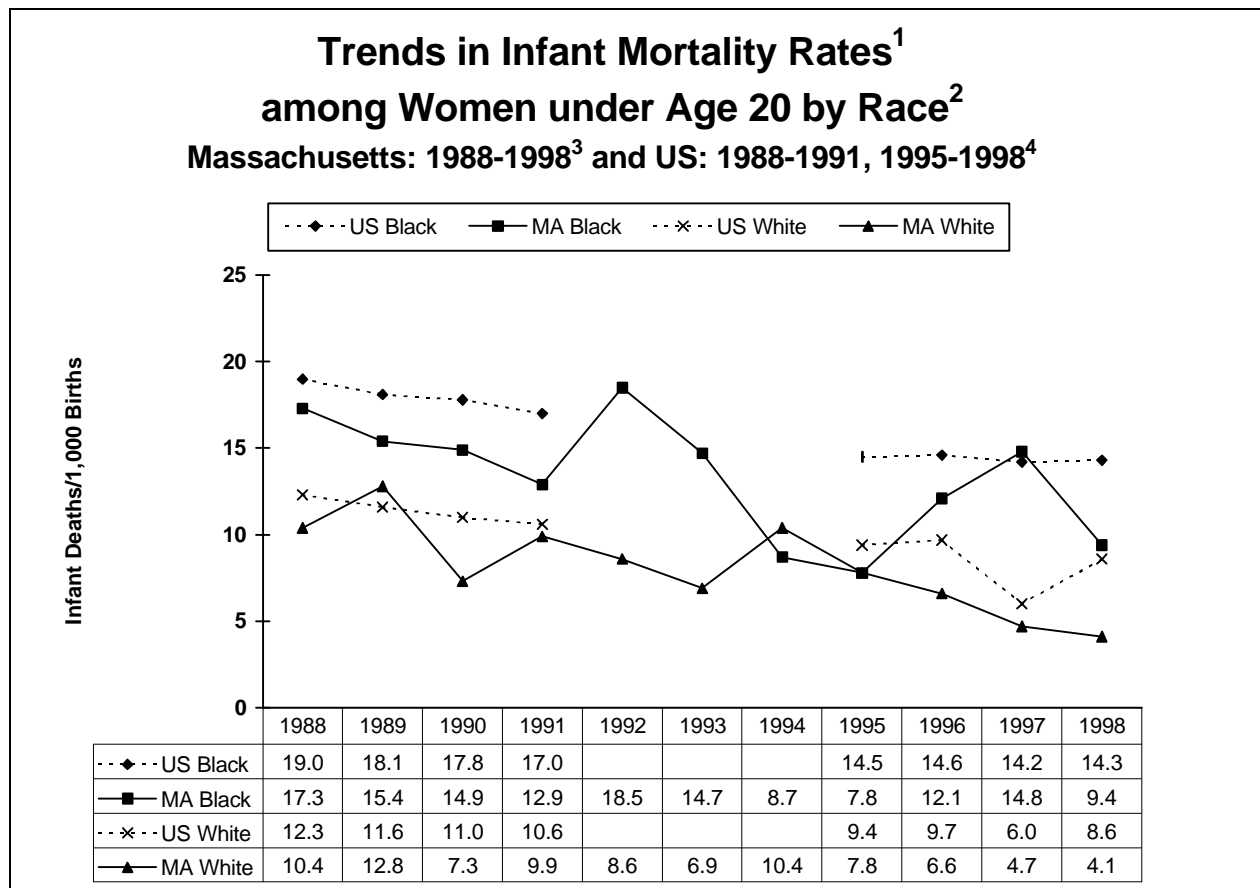
<sup>1</sup> Age-specific infant mortality rate: Number of infant deaths per 1,000 live births to mothers in each age group (see Glossary for further explanation).

<sup>2</sup> 1998 is the latest year data are available for this analysis (see Technical Notes for further explanation).

<sup>3</sup> U.S. data is not available for 1992-1994

- The infant mortality rate (IMR) in Massachusetts remained much lower than the national average among both teen and adult mothers. The IMR among Massachusetts teen births in 1998 was 28.4% lower than the IMR among U.S. teen births (7.3 vs. 10.2 deaths per 1,000 live births). Similarly, the IMR among Massachusetts adult births was 29.9% lower than the national IMR among older mothers (4.7 vs. 6.7 deaths per 1,000 live births).
- The teen IMR, as well as the adult IMR, for both the U.S. and MA remained relatively stable between 1997 and 1998.

**Figure 10.**



Source: Massachusetts data from Registry of Vital Records and Statistics, MDPH: 1988-1998. U.S. data from the National Center for Health Statistics, 1988-1991 and 1995-1998.

<sup>1</sup> Age and race-specific infant mortality rate: Number of infant deaths per 1,000 live births to mothers in each age group (see Glossary for further explanation).

<sup>2</sup> The white and black race categories include Hispanics.

<sup>3</sup> 1998 is the latest year data were available for this analysis (see Technical Notes for further explanation).

<sup>4</sup> U.S. data is not available for 1992-1994.

- The IMR among births to white mothers for the U.S. rose considerably from 6.0 deaths per 1,000 live births in 1997 to 8.6 death per 1,000 live births in 1998. The IMR among births to white mothers was 4.1 in 1998, compared to 4.7 in 1997.
- The IMR for births to black mothers in Massachusetts, which had risen in recent years, dropped from 14.8 deaths per 1,000 live births in 1997 to 9.4 deaths per 1,000 live births in 1998. During the same period, the IMR among births to black mothers nationally has remained fairly stable at 14.3 deaths per 1,000 live births.



**Table 18.**  
**Infant Mortality Rates\*<sup>1</sup> by Low Birthweight<sup>2</sup> and Mother's Age**  
**Massachusetts: 1998<sup>3</sup>**

Mother's Age	<1500g		1500-2499g		<2500g		2500+g	
	N <sup>4</sup>	IMR	N <sup>4</sup>	IMR	N <sup>4</sup>	IMR	N <sup>4</sup>	IMR
<b>20 + Years</b>	214	223.6	40	9.6	254	49.5	95	1.3
<b>&lt; 20 Years</b>	23	203.5	10	24.4	33	63.1	9	1.7

Source: Registry of Vital Records and Statistics, MDPH: 1999

\* Unknown birthweight excluded.

<sup>1</sup> Age and birthweight-specific infant mortality rate: Number of infant deaths per 1,000 live births in each age group (see Glossary for further explanation).

<sup>2</sup> Low birthweight: < 2,500 grams or 5.5 pounds

<sup>3</sup> Year data are available for this analysis (see Technical Notes for further explanation).

<sup>4</sup> "N" refers to the number of deaths occurring in that age and birthweight category.

- The infant mortality rate (IMR) among normal birthweight infants (2,500 grams or more) was similar for teen mothers and adult mothers (1.7 and 1.3 deaths per 1,000 live births). These figures experienced little change between 1997 and 1998. In 1997, the IMR for births to adult mothers was 1.2, while the IMR for births to teen mothers was 1.7 (1997 data not shown).
- The IMR increased dramatically as birthweight declined among both teen and adult mothers in 1998. The IMR among very low birthweight births (<1,500 grams) for adult mothers was 223.6 compared to 9.6 among moderately low birthweight births (1,500 to 2,499 grams). Similarly, among teen mothers, the IMR for very low birthweight births was 203.5 compared to 24.4 for moderately low birthweight births.
- The IMR among births to teen mothers was lower than the IMR among births to adult mothers for very low birthweight births (203.5 vs. 223.6 deaths per 1,000 live births). For moderately low birthweight births, however, the IMR was lower among older mothers (9.6 vs. 24.4 deaths per 1,000 live births). Among all low birthweight births (<2,500 grams) in 1998, the IMR for births to teen mothers was higher than the IMR for births to adult mothers (63.1 vs. 49.5 deaths per 1,000 live births).

**Table 19.**  
**Trends in Neonatal and Post Neonatal Mortality Rates**  
**by Mother's Age**  
**Massachusetts: 1992-1998<sup>1</sup>**

Year	Mother's Age	Neonatal <sup>2</sup> Mortality		Post Neonatal <sup>3</sup> Mortality		Total Infant <sup>4</sup> Mortality	
		N <sup>5</sup>	Rate	N <sup>5</sup>	Rate	N <sup>5</sup>	Rate
1992	20+	372	4.6	130	1.6	502	6.2
	<20	52	7.8	21	3.2	73	11.0
1993	20+	331	4.2	123	1.6	454	5.8
	<20	44	6.7	20	3.0	64	9.7
1994	20+	309	4.0	122	1.6	431	5.6
	<20	47	7.2	17	2.6	64	9.7
1995	20+	263	3.5	96	1.3	359	4.8
	<20	29	4.7	19	3.1	48	7.9
1996	20+	252	3.4	95	1.3	347	4.7
	<20	28	4.8	19	3.2	47	8.0
1997	20+	292	3.9	77	1.0	369	4.9
	<20	35	5.9	6	1.0	41	6.9
1998	20+	286	3.8	72	1.0	358	4.7
	<20	33	5.6	10	1.7	43	7.3

Source: Registry of Vital Records and Statistics, MDPH: 1991-1999

<sup>1</sup> 1998 is the latest year data were available for this analysis (see Technical Notes for further explanation).

<sup>2</sup> Neonatal: Less than 28 days (see Glossary)

<sup>3</sup> Post neonatal: 28-364 days (see Glossary)

<sup>4</sup> Age-specific infant mortality rate: Number of infant deaths per 1,000 live births in each age group (see Glossary for further explanation)

<sup>5</sup> "N" refers to the number of deaths occurring in that year.

- The neonatal mortality rate among births to teen mothers remained higher in 1998 than the rate among births to adult mothers (5.6 vs. 3.8 deaths per 1,000 live births). The rate for teen mothers remained stable from 1997 (5.9) to 1998 (5.6).
- Post neonatal mortality rates differed only slightly in 1998 between teen and adult mothers (1.7 vs. 1.0 deaths per 1,000 live births). The rate among births to teen mothers, however, has varied over time.
- In 1998, among both adult and teen mothers, the rates of post neonatal mortality were considerably lower than the rates for neonatal mortality (3.8 vs. 1.0 for adult mothers and 5.6 vs. 1.7 for teen mothers).

**Table 20.**

## Maternal Smoking<sup>1,2</sup> During Pregnancy by Mother's Age and Race/Hispanic Ethnicity Massachusetts: 1999

Mother's Race/Ethnicity	< 20 Years			20+ Years		
	Births N <sup>3</sup>	Smokers N	%	Births N <sup>3</sup>	Smokers N	%
<b>Total</b>	5,588	1,133	20.3	75,278	7,468	9.9
<b>White*</b>	2,686	822	30.6	57,716	6,239	10.8
<b>Black*</b>	719	77	10.7	5,125	482	9.4
<b>Hispanic</b>	1,746	176	10.1	7,069	549	7.8
<b>Asian*</b>	215	18	8.4	3,923	48	1.2
<b>Other*</b>	218	40	18.3	1,259	150	11.9
<b>Unknown</b>	4	0.0	0.0	186	0	0.0

Source: Registry of Vital Records and Statistics, MDPH, 1999

\* Non-Hispanic

<sup>1</sup> Any amount of cigarette smoking by mother during pregnancy

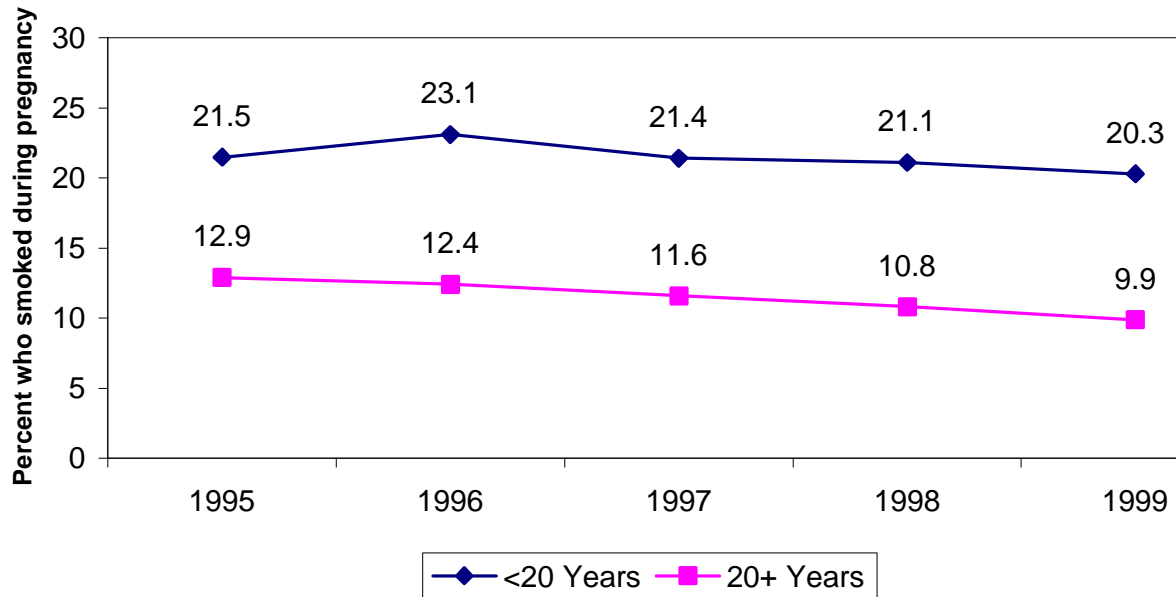
<sup>2</sup> Maternal smoking is self-reported by mothers, usually following the birth of their child, and as such these data should be interpreted cautiously. Self-reported data may be biased, artificially lowering smoking prevalence.

<sup>3</sup> Cases with unknown smoking status are excluded.

- As in 1998, teen mothers reported much higher rates of smoking during pregnancy in 1999 than adult mothers (20.3% vs. 9.9%).
- Between 1998 and 1999, both segments displayed little change in the prevalence of smoking during pregnancy. The percentage of teen mothers who smoked during pregnancy was 20.3%, compared to 21.1% in 1998, while the prevalence of adult women smoking during pregnancy was 9.9%, compared to 10.8% in 1998. (1998 data not shown.)
- Among teen mothers, white non-Hispanic women had the highest prevalence of smoking (30.6%), dramatically higher than their adult counterparts (10.8%). Asian teen mothers had the lowest prevalence of smoking (8.4%).
- From 1998 to 1999, the smoking rate for Hispanics increased 6.3% (from 9.5% to 10.1%) and for Asian teen mothers increased 10.5% (from 7.6% to 8.4%). However, the rate among white non-Hispanic mothers decreased 3.8% (from 31.8% to 30.6%). The smoking rate for black non-Hispanic teen mothers did not change between 1998 and 1999. (1998 data not shown.)

**Figure 11.**

### Trends in the Percent Smoking During Pregnancy by Mother's Age: Massachusetts 1995-1999



Source: Registry of Vital Records and Statistics, MDPH, 1995-1999.

- In 1999, both teen mothers and adult mothers reported a five year low in the percentage of mothers who smoked during pregnancy.
- From 1995 to 1999, the percent of women under 20 who smoked during pregnancy decreased 5.6% (from 21.5% to 20.3%). Adult mothers reported a 22.5% decrease (from 12.9% to 9.9%) in smoking during pregnancy over this same time period.

**Table 21.**  
**Low Birthweight by Mother's Age, Smoking<sup>1,2</sup> Status**  
**and Race/Hispanic Ethnicity**  
**Massachusetts: 1999**

Mother's Age	Smokers			Non-Smokers		
	Births N <sup>3</sup>	LBW N      % <sup>4</sup>		Births N <sup>3</sup>	LBW N      % <sup>4</sup>	
<b>20 Years and Older</b>	7,468	820	11.0	67,547	4,375	6.5
<b>White*</b>	6,239	632	10.1	51,401	2,980	5.8
<b>Black*</b>	482	87	18.0	4,640	544	11.7
<b>Hispanic</b>	549	73	13.3	6,513	484	7.4
<b>Asian*</b>	48	2	**	3,875	274	7.1
<b>Other/Unknown*</b>	150	26	17.3	1,118	93	8.3
<b>&lt; 20 Years</b>	1,133	116	10.2	4,443	381	8.6
<b>White*</b>	822	79	9.6	1,856	132	7.1
<b>Black*</b>	77	10	13.0	641	70	10.9
<b>Hispanic</b>	176	20	11.4	1,569	142	9.1
<b>Asian*</b>	18	4	**	197	21	10.7
<b>Other/Unknown*</b>	40	3	**	180	16	8.9

Source: Registry of Vital Records and Statistics, MDPH, 1999

\* Non-Hispanic

<sup>1</sup> Any amount of smoking cigarettes by mother during pregnancy

<sup>2</sup> Maternal smoking is self-reported by mothers, usually following the birth of their child, and as such these data should be interpreted cautiously. Self-reported data may be biased, artificially lowering smoking prevalence.

<sup>3</sup> Cases with unknown smoking status or birthweight were excluded.

<sup>4</sup> Percentage of low birthweight births (<2,500 grams) to smoking or non-smoking mothers

- For both teen and adult mothers, low birthweight births increased with smoking during pregnancy. Low birthweight births occurred more frequently among mothers who smoked during pregnancy for white non-Hispanic, black non-Hispanic, and Hispanic teen women.
- Compared to 1998, low birthweight births to smokers increased in 1999 for teen mothers (8.8% to 10.2%), and remained essentially stable for adult mothers (10.4% to 11.0%) (1998 data not shown). However, this trend varied by race/Hispanic ethnicity. White non-Hispanic smokers showed an increase in low birthweight births, while Hispanic and black non-Hispanic smokers showed a decrease in low birthweight births among both teens and adults.
- The percentage of low birthweight births among adult smokers was 69.2% higher (11.0% vs. 6.5%) than among adult non-smokers. Among teens, the percentage of low birthweight births was 18.6% higher (10.2% vs. 8.6%) for smokers compared with non-smokers.

- Low birthweight among smokers varied between the two age groups. A higher percentage of low birthweight births was reported for adults as compared to their teen counterparts among black non-Hispanic (18.0% vs. 13.0%) and Hispanic (13.3% vs. 11.4%) smokers.

**Table 22.**  
**Smoking Level<sup>1</sup> Before and During Pregnancy by Mother's Age**  
**Massachusetts: 1999**

Smoking Prior To Pregnancy			Smoking During Pregnancy							
			Quit		Reduced		Same or More		Total Continued	
	N	%	N	%	N	%	N	%	N	%
<b>All Smokers</b>	<b>14,888</b>	<b>18.5</b>	<b>6,287</b>	<b>42.2</b>	<b>6,105</b>	<b>41.0</b>	<b>2,496</b>	<b>16.8</b>	<b>8,601</b>	<b>10.7</b>
20+ Years	12,975	17.3	5,507	42.4	5,258	40.5	2,210	17.0	7,468	10.0
< 20 Years	1,913	34.3	780	40.8	847	44.3	286	15.0	1,133	20.3
<b>Light Smokers</b>	<b>7,164</b>	<b>8.9</b>	<b>4,122</b>	<b>57.5</b>	<b>1,668</b>	<b>23.3</b>	<b>1,374</b>	<b>19.2</b>	<b>3,042</b>	<b>3.8</b>
20+ Years	6,135	8.2	3,607	58.8	1,381	22.5	1,147	18.7	2,528	3.4
< 20 Years	1,029	18.4	515	50.0	287	27.9	227	22.1	514	9.2
<b>Moderate Smokers</b>	<b>6,470</b>	<b>8.0</b>	<b>1,965</b>	<b>30.4</b>	<b>3,535</b>	<b>54.6</b>	<b>970</b>	<b>15.0</b>	<b>4,505</b>	<b>5.6</b>
20+ Years	5,743	7.7	1,727	30.1	3,100	54.0	916	15.9	4,016	5.4
< 20 Years	727	13.0	238	32.7	435	59.8	54	7.4	489	8.8
<b>Heavy Smokers</b>	<b>1,254</b>	<b>1.6</b>	<b>200</b>	<b>15.9</b>	<b>902</b>	<b>71.9</b>	<b>152</b>	<b>12.1</b>	<b>1,054</b>	<b>1.3</b>
20+ Years	1,097	1.5	173	15.8	777	70.8	147	13.4	924	1.2
< 20 Years	157	2.8	27	17.2	125	79.6	5	3.2	130	2.3

Source: Registry of Vital Records and Statistics, MDPH, 1999

<sup>1</sup> Daily use: Light = 1-10 cigarettes, Moderate = 11-20 cigarettes, Heavy = 21+ cigarettes

- Overall, the fewer cigarettes mothers smoked *prior* to pregnancy, the more likely they were to quit or reduce their level of smoking *during* pregnancy. This pattern was found across all groups. Both teen and adult women had similar rates of quitting during pregnancy.
- Among teen mothers who were light smokers prior to pregnancy (smoked 1-10 cigarettes per day), half (50.0%) quit smoking during pregnancy, 27.9% reduced their levels of smoking and 22.1% increased or maintained their smoking level. A similar pattern also occurred among adult mothers.
- In 1999, 92.5% of teen mothers who were moderate smokers prior to pregnancy either quit or reduced their consumption, compared with 84.1% of adult mothers in the same category. Among moderate teen smokers, 59.8% reduced their smoking status to light and 32.7% quit, while 54.0% of moderate adult smokers reduced to light smoking and 30.1% quit.
- Older mothers (ages 20 and older) who were heavy smokers prior to pregnancy (smoked 21 or more cigarettes per day) were far less likely to quit or reduce their smoking levels compared with heavy smoking teen mothers. Among the heavy smoking mothers, 96.8% of teens either quit or reduced their smoking levels to light compared with 86.6% of older mothers. Similarly, 13.4% of older, heavy smoking mothers remained heavy smokers during pregnancy, as opposed to only 3.2% of teen, heavy smoking mothers.

**Table 23.**  
**Expected Educational Attainment among Teen Mothers**  
**by Race/Hispanic Ethnicity**  
**Massachusetts: 1999**

Community	Behind Grade Level <sup>1</sup>					
	1997		1998		1999	
	Number	Percent	Number	Percent	Number	Percent
<b>Total</b>	1,744	29.7	1,833	31.1	1,771	31.7
<b>White*</b>	760	26.6	831	28.2	790	29.5
<b>Black*</b>	141	17.8	147	19.8	151	21.0
<b>Hispanic</b>	721	40.0	735	41.4	700	40.1
<b>Asian*</b>	63	29.4	53	28.6	66	30.7
<b>Other</b>	59	28.9	66	27.6	64	29.5
<b>Unknown</b>	0	0.0	1	**	0	0.0

Source: Registry of Vital Records and Statistics, MDPH, 1997-1999

\* Non-Hispanic

<sup>1</sup> "Behind Grade Level" is defined as two or more grades behind the maximum expected age for a grade at the time of delivery (see Technical Notes and Glossary for further explanation).

- In 1999, 31.7% of births to teens (< 20 years of age) were to women who were behind their expected grade level at school.
- Among race/Hispanic ethnic groups, Hispanic teen mothers were most likely to be behind their expected grade level (40.1%), followed by Asian teen mothers (30.7%) and white non-Hispanic teen mothers (29.5%). Black non-Hispanic teen mothers were least likely to be behind their expected grade level at the time of delivery (21.0%).
- From 1997 to 1999, among all race/Hispanic ethnicity groups, the percentage of teen mothers who were behind their expected grade level increased 6.7% (29.7% to 31.7%). Black non-Hispanics had the greatest increase, 18.0% (from 17.8% to 21.0%) followed by white non-Hispanics, 10.9% (from 26.6% to 29.5%).